

Rec'd 4/27/78 & dist. made to all staff



HONOLULU
LA JOLLA
MONTEREY
TIBURON

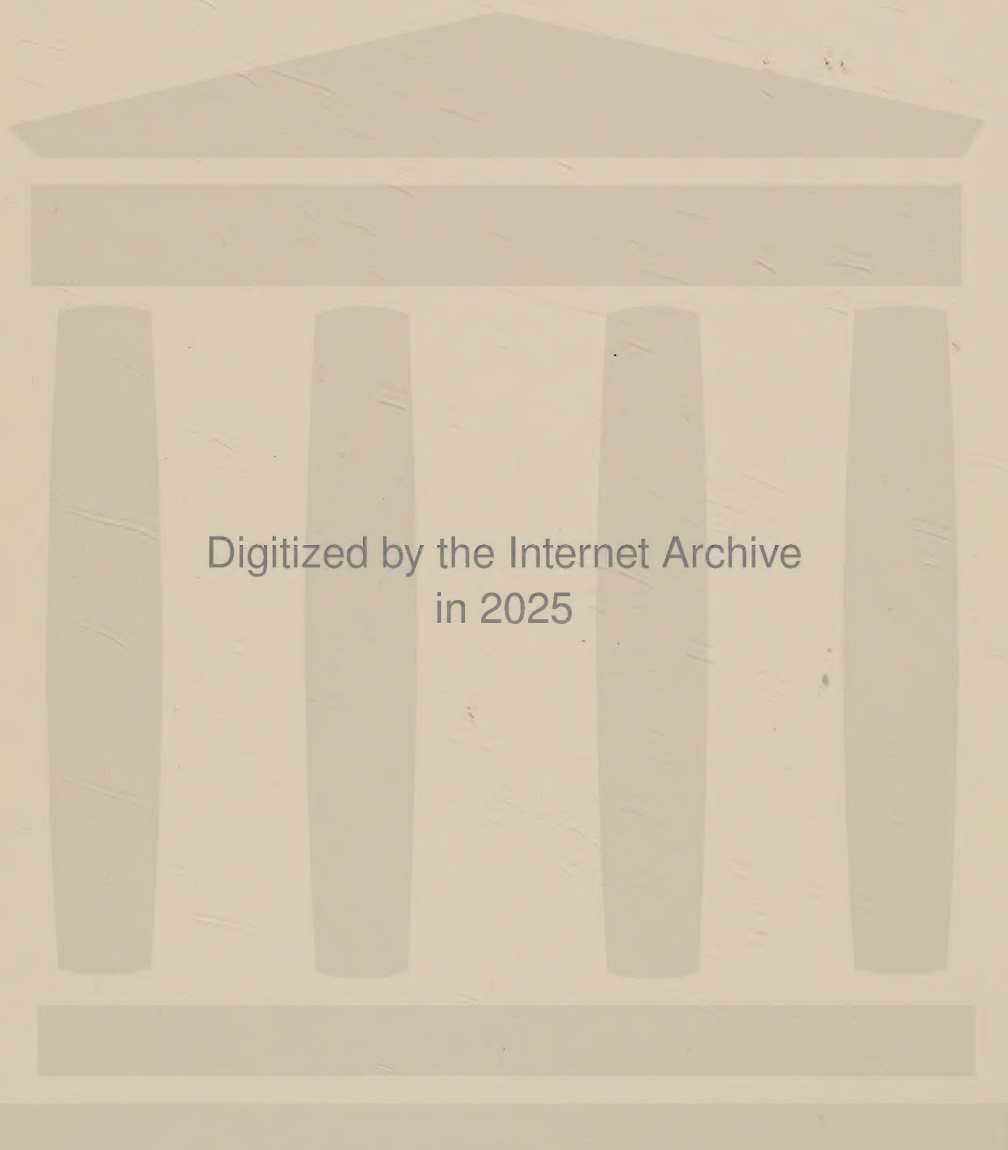


SOUTHWEST FISHERIES CENTER

MONTHLY REPORT - JANUARY 1978

RESEARCH HIGHLIGHTS

	<u>Page</u>
Scientists in Fisheries Management Research Task Provide Input to Precious Coral Fishery Management Plan	4
Biology of Various Fishes and Crustaceans from the Northwestern Hawaiian Islands Being Investigated	5
Tuna Energetics Workshop Held at Honolulu Laboratory	6
Studies Show Depletion of Earth's Ozone Layer May Be Harmful to Oceanic Fish Populations	7
Significant Improvements Made in Methodology of Food Cultures for Larval Fishes	9
CalCOFI-INP Scientists Meet to Review Joint Research Efforts in 1977	11
Proposals for Socio-Economic Research for SW Region Forwarded to Washington	12
Porpoise Containment System Undergoes Testing at Mississippi Facility	14
Center to Sponsor Age Determination Conference and Workshop on Toothed Whales	15
Dedicated Tuna Vessel Departs on First Cruise	15
Tuna Vessels Continue Participation in FAX Program	17
Biological Data Collected on Atlantic-Caught Tunas	18
U.S. Tuna Purse Seiner Catches Sampled for Size Composition	19
Preparations Made for Salmon Imprinting Studies	21



Digitized by the Internet Archive
in 2025

SOUTHWEST FISHERIES CENTER
LA JOLLA, CALIFORNIA

HONOLULU LABORATORY
LA JOLLA LABORATORY
TIBURON LABORATORY
PACIFIC ENVIRONMENTAL GROUP

MONTHLY REPORT - JANUARY 1978

STATUS OF PUBLICATIONS

Approved by Center Director

Parker, Keith R. Density estimation by variable area transect. For publication in the Journal of Wildlife Management.

Mendelssohn, Roy and Matthew J. Sobel. Capital accumulation and the optimization of renewable resource models. For publication in Journal of Economic Theory.

Mendelssohn, Roy. Managing stochastic multispecies models. For publication in Mathematical Biosciences.

Mendelssohn, Roy. Optimal harvesting strategies for stochastic, single-species, multiage class models. For publication in Mathematical Biosciences.

Published

Bertelsen, E., and Paul J. Struhsaker. 1977. The ceratioid fishes of the genus Thaumatichthys. Osteology, relationships, distribution, and biology. Galathea Report 14:7-40.

Huppert, Daniel D. 1977. Constraints to welfare gains under extended jurisdiction fisheries. American Journal of Agricultural Economics 59(5): 877-882.

Kramer, David. 1977. Zooplankton fixation and preservation, H. R. Steedman, ed. Bulletin of Marine Science 27(4): 834-836.

This report does not constitute publication and is for information only.

Laurs, R. Michael and Ronald J. Lynn. 1977. Seasonal migration of North Pacific albacore, Thunnus alalunga, into North American coastal waters: Distribution, relative abundance, and association with Transition Zone waters. Fishery Bulletin, U.S. 75(4): 795-822.

In the spring months of 1972-74, fishery-oceanography surveys were conducted in the eastern North Pacific which combined intensive oceanographic sampling by research vessels with concurrent fishing effort for albacore by chartered commercial fishing vessels. The catches demonstrate an association of albacore distribution with the Transition Zone and its boundaries. The relative abundance of albacore was found to be high in the eastern sector of the Transition Zone or a period just prior to their movement across the California Current and into the traditional nearshore fishing grounds. These centers of high relative abundance of albacore are sometimes sufficient to support commercial fishing earlier and farther offshore than the traditional fishing season. Variations in the pattern of migration occur in apparent response to variations in the character and development of the Transition Zone and its frontal structure. Analyses of albacore tagging and size frequency data provide evidence that the shoreward-migrating albacore of the Pacific Northwest and California are independent groups.

Perrin, William F., David B. Holts and Ruth B. Miller. 1977. Growth and reproduction of the eastern spinner dolphin, a geographical form of Stenella longirostris in the eastern tropical Pacific. Fishery Bulletin, U.S. 75(4): 725-750.

Estimates of life history parameters for use in assessing status of the population of the eastern spinner dolphin and assessing impact of incidental mortality in the yellowfin tuna fishery are developed from data on 2,675 specimens collected from 1968 to 1975. Average length at birth is 77.0 cm, gestation is 10.6 mo, average length at 1 yr is approximately 134 cm. Three alternative hypotheses of rate of deposition of dentinal growth layers are: 1) 1.5 layers/yr throughout life; 2) 1.5 layers in the first year, 1/yr thereafter (most favored hypothesis); and 3) 1.5 layers until puberty (at 5.5 layers in females and 9 layers in males), and 1/yr thereafter. Males attain sexual maturity on the average at about 170 cm (range 160-195) and 9-12 layers (6.0-11.5 yr), depending on the criterion of testis-epididymis weight chosen. Average length at attainment of social maturity is unknown. Average length of adult males is 174-176 cm. Females on the average attain sexual maturity at 165 cm (5.5 layers or 3.7, 5.0 or 3.7 yr under Hypotheses 1, 2 and 3). Average length of sexually adult females is 171 cm (range 152-187). Ovulation rate is 1/growth layer (1/0.67-1.00 yr) until about 10 ovarian corpora have been accumulated, after which the rate declines. Approximately 1% of adult females are postre-productive. Best estimates of annual pregnancy rate range from

0.45 (based on 1973 data) to 0.474 (based on 1974 data). The pooled estimate for all years' data is 0.461. The corresponding estimates of calving interval (reciprocal of pregnancy rate) are 2.22 yr, 2.11 yr, and 2.17 yr, respectively. Pregnancy rate decreases after age of about 12 years (8.0, 11.5 or 10.2 yr) concomitant with increase in lactation rate. Overall sex ratio is near parity, but there are about 6% more females than males in adults. Best estimates of gross annual reproductive rate based on the 1973, 1974, and 1975 data are 0.099, 0.103 and 0.105, respectively. The estimate based on pooled data for the 3 yr is 0.102. The estimates are compared with estimates for the spotted dolphin, Stenella attenuata, and for other cetaceans.

Rosenblatt, Richard H., and John L. Butler. 1977. The ribbonfish genus Desmodema, with the description of a new species (Pisces, Trachipteridae). Fishery Bulletin, U.S. 75(4): 843-855.

The genus Desmodema is unique within the Trachipteridae in that the upper caudal lobe, borne on the second ural centrum, is not upturned, and the lower caudal lobe, borne on the first ural centrum in other trachipterids, is absent, and in that there are seven dorsal pterygiophores before the first neural spine. Desmodema lorum n.sp. can be distinguished from D. polystictum (Ogilby) on the basis of having more vertebrae, fewer caudal rays, a longer tail, and the snout longer than the eye diameter. Desmodema polystictum is probably circumtropical; D. lorum is restricted to the North Pacific Ocean. The species of Desmodema have a distinctive prejuvenile phase characterized by polka dots on the sides, long pelvic fins, a relatively short tail, and elongation of the first six dorsal rays. Metamorphosis is abrupt and involves loss of the pelvic fins, elongated dorsal rays and polka dots, and a great lengthening of the tail. It is suggested that metamorphosis accompanies movement to a deeper habitat. The elongated tail is related to extension of the lateral-line sensory system. On the basis of joint possession of a dermal tubercle and pore system and an abruptly constricted body, Desmodema and Zu are regarded as related. Desmodema, but not Zu, agrees with Regalecus in the arrangement of the dorsal pterygiophores.

Translations

Suisan Sekai. 1977. On the performance of skipjack tuna fishing vessels of western Izu Peninsula (Nishi-Izu katsuo ipponzurisen no doko). Suisan Sekai 26(8):34-37, August 1977. (Translated from Japanese by Tamio Otsu, 1978, 8 p., Translation No. 26.)

Suisan Sekai. 1977. How to effectively kill tunas in order to maintain quality and higher prices. Suisan Sekai 26(9):52-57, September 1977. (Translated from Japanese by Tamio Otsu, 1978, 4 p., Translation No. 25.).

HONOLULU LABORATORY

RESOURCE ASSESSMENT AND DEVELOPMENT INVESTIGATIONS (RADI)

Scientists in Fisheries Management Research
Task Provide Input to Precious Coral
Fishery Management Plan

Dr. Jerry Wetherall, Leader, Fisheries Management Research Task, and Marian Yong, Mathematician at the Honolulu Laboratory, completed an equilibrium analysis of annual yield policies for pink coral, given a variety of minimum age restrictions and assumptions on stock-recruitment functions. These allowed a determination of best sustained yield policies for both nonselective fishing methods (e.g., dredges) and selective ones (e.g., submersibles) under different possible stock-recruitment options. In addition, with assistance from Dr. Michael Adams, Industry Economist, Wetherall and Yong extended their harvest simulation model to evaluate alternative coral harvest policies under a variety of assumed cost and price structures. The measure compared was the present value of a 50-yr harvest sequence, given the historical catch record, assumed population dynamics, and assumed cost and price trends. From an economic standpoint the most attractive harvest policies were those involving periodic harvests.

Observations on Fish Aggregating Devices Continue

Walter Matsumoto, Fishery Biologist at the Honolulu Laboratory, reported that a monitoring trip was made to aggregating objects A, C, and D aboard the chartered vessel, Easy Rider. Two bird flocks were sighted at C and one at D. Trolling yielded only one mahimahi 4.4 miles inshore of A. Fishing around the objects was unsuccessful, probably due to competition from trollers in the area. Three trolling boats were seen at A, two at C, and one commercial skipjack tuna fishing boat at D.

There were numerous mammal sightings on this trip. Eight to 10 pilot whales were seen near A, 1 whale shark, and 7 humpback whales were seen near C, and a herd of 15 to 20 spinner porpoises were seen 6 miles from D. No tuna schools were seen associated with the mammals or whale shark.

Trolling boat activity continued at A and C and the usual catches of mahimahi were reported. Two large skipjack tuna and 10 to 15 small tunas (yellowfin, kawakawa, and skipjack, 2 to 3 lbs in size) were caught at A and 2 skipjack tuna schools were reported within 1 mile of A.

Commerical skipjack tuna fishing boat activity around the objects increased during the month. Object A was visited four times, twice by one boat which reported catching large skipjack tuna (24 lbs) on both days but did not disclose the catches. One boat fished 5 to 6 miles of C 1 day and caught 3,600 lbs. One boat fished at D for 2 days, but caught only small tunas (2 to 3 lb yellowfin and kawakawa). At least 7 of the 12 boats comprising the skipjack tuna fleet has visited the objects at least once.

Biology of Various Fishes and Crustaceans from the
Northwestern Hawaiian Islands Being Investigation

Richard Uchida, Leader, Insular Resources Task at the Honolulu Laboratory, reported that a number of studies relating to the biology of various crustaceans and fishes from the Northwestern Hawaiian Islands (NWHI) is in progress. Under the supervision of James Uchiyama, Fishery Biologist, Research Assistant Robert Moffitt aged 30 goatfish, Parupeneus porphyreus, by counting daily growth marks on otoliths. The fish ranged in size from 36 to 335 mm in fork length and the youngest fish was estimated to be 42 days old and the oldest 684 days old. Moffitt has also begun a preliminary analysis of goatfish length-weight and standard length relationships; gonad studies indicated a spawning peak in April and May.

Research Assistants Jose Enitan and Jeff Sampaga completed aging determinations on 14 Decapterus pinnulatus specimens. The specimens were 88 to 298 mm in standard length and ranged from 85 to 273 days in age.

Uchiyama began examining lobster tagging data in relation to growth and migration. Gary Kamer, Statistician, has been analyzing slipper lobster morphometric data including fitting regression lines to various sets of variables.

* * * * *

Dr. Adams prepared proposals for contract work in fishery economics, in reponse to a request from Washington. He developed proposals for four studies:

1. Economic evaluation of the recreational fisheries of the Western Pacific Fishery Management Region.
2. Economic survey and description of market information for the food-fish products in Hawaii.
3. Bioeconomic analysis of price and catch history at the Honolulu fish auction.

4. Fish consumption in the State of Hawaii.

* * * * *

Dr. Roy Mendelssohn, Operations Research Analyst, continued his work in harvest policy optimization for stochastic populations. His latest work, which he is reporting in a series of manuscripts, deals with reducing computational requirements for solution of the Markov decision processes. Success in this area will greatly facilitate the application of his policy optimization models to real-world fishery management situations.

* * * * *

Mr. Thomas Hida, Fishery Biologist, and Research Assistants Glenn Highashi, Darryl Tagami, and Martina Queenth made preparations for Townsend Cromwell cruise 78-01.

Mr. Paul Shiota processed plankton samples from the NWHI.

January Landings of Skipjack Tuna Slightly Above January Long-Term Average

The January 1-29 Hawaii landings of skipjack tuna were estimated at 243.5 metric tons (MT), which is 316.5 MT below the landings for the same period in 1977 and 98.1 MT greater than the 1948-77 long-term average for the same period.

FISH-ENVIRONMENT INVESTIGATIONS (FEI)

Tuna Energetics Workshop Held at Honolulu Laboratory

During January (January 3-14), a workshop was convened at the Honolulu Laboratory, by the Experimental Ecology of Tunas Task, under the leadership of Dr. Andrew Dizon to review informally the past progress and future goals of the Task and to prepare a research proposal for submittal to the National Science Foundation. Participants included: Drs. James Kitchell and Warren Porter from the University of Wisconsin, Drs. Theodore Wu and George Yates from the California Institute of Technology, Richard Brill from the University of Hawaii and Dr. Andrew Dizon. Also attending were Dr. Jean Cramer, University of Hawaii, and Research Assistant Randolph Chang.

One result of the workshop was a synthesis of the results of past research and consensus identifying areas of needed future research. Foremost among the questions posed were: What are the limiting conditions for these most active of all fishes that live in the energy-poor pelagic

region? What, if any, advantage is accrued through their apparent abilities to conserve heat and/or thermoregulate? A proposal was prepared which outlines a program of research designed to answer both the questions posed. The approach is primarily directed towards measures of energy transfer from the various perspectives of hydro-dynamics, respiratory and muscle physiology, heat transfer, and whole-organism energetics. Each perspective stands independently as a method for determining energy-output of a swimming tuna.

* * * * *

Dizon and Brill built the first model of an ultrasonic transmitter designed to telemeter muscle action potentials from either red or white muscle or heart muscle. Initial tests were successful; the tag will be deployed to confirm initial observations that significant white muscle power is utilized by tunas swimming well below maximum sustainable swimming speeds.

LA JOLLA LABORATORY

Coastal Fisheries Resources Division

LARVAL FISHES, COASTAL EASTERN PACIFIC PROGRAM

Studies Show Depletion of Earth's Ozone Layer May Be Harmful to Oceanic Fish Populations

A study supported by the Environmental Protection Agency (EPA) shows that increased ultraviolet radiation resulting from a depletion of the earth's ozone layer could be harmful to oceanic fish populations. Cooperative studies involving the National Marine Fisheries Services' Laboratory at La Jolla and the University of California, San Diego, indicate that anchovy and mackerel larvae are highly sensitive to ultraviolet radiation. Radiation at higher dose levels is lethal and at lower levels produces small lesions in the brain and eye and retards growth and development in the young stages of these fishes. Significant damage occurred after only 4 days exposure to ultraviolet radiation at levels equivalent to that produced by a 25% reduction in the ozone layer.

Partial loss of the earth's protective ozone layer caused by injection of man-made pollutants into the troposphere may pose a serious threat to young stages of marine fishes. The ozone layer which normally prevents damaging amounts of ultraviolet radiation from reaching the sea surface is expected to be reduced by chemical reaction with such air-borne

substances as fluorocarbon aerosol propellants, high altitude aircraft exhausts, and the decomposition products of widely used chemical fertilizers.

With funds from the Environmental Protection Agency and the National Marine Fisheries Service, Drs. J. Hunter, J. Taylor and G. Moser have exposed anchovy and mackerel eggs and larvae to increased ultraviolet light using filtered sunlamps. They point out that early larval stages are more vulnerable to ultraviolet radiation than at any other time of life. At this time, the fish have no scales or other integument to protect them, and they float near the surface in an inactive stage where they are exposed to the highest levels of ultraviolet radiation in the sea. Measurements of penetration of ultraviolet energy in the sea by Dr. Raymond Smith of UCSD indicate that significant damage to anchovy larvae, in 4 days, would be expected down to a depth of 1 to 2 feet in clear ocean water given a 25% reduction in ozone. Anchovy eggs and larvae occur at these depths in the sea and therefore could be exposed to harmful radiation.

A recent NASA publication forecasts over a long time period a possible 10 to 15% reduction in the ozone layer as a result of man's activities. Such a reduction would produce levels of UV radiation below those found in this study to be harmful. Dr. Hunter points out, however, that the work so far dealt only with the first 4 or 5 days of life and larvae could be expected to be exposed to much longer periods in the sea. He believes that the effects of ultraviolet radiation are cumulative, and if exposed for longer periods the exposure they could tolerate would be substantially lower than those indicated by the present results. The research team hopes to continue the study to include longer exposure times.

Damage to fishes such as anchovy and mackerel, which in their early stages inhabit the upper layers of the sea, is important from the standpoint of the commercial value of these fishes. Anchovy are also an extremely important forage fish for large commercial and game fishes as well, such as the tunas, yellowtail, bonita and others.

Anchovy Larvae Examined Histologically for Evidence of Starvation

Fishery Biologist C. O'Connell of the La Jolla Laboratory reported that in March 1977 anchovy larvae were collected at 64 stations off southern California for histological studies of starvation signs. During January 1978 larvae from nine of these stations were examined. Five larvae were judged to be in poor condition and four in questionable condition. Of the 9, one was among 36 specimens and 3 nearshore stations and the other were among 43 specimens from 6 offshore stations. One of the emaciated anchovy larvae was about 5 mm in length and from offshore. The others were between 6 and 11.5 mm.

Emaciation in these several larvae was evident in low zymogen levels and sometimes cell degeneration in the pancreas, moderate to severe dissociation of trunk musculature, and deterioration in both the foregut and midgut mucosae. Of the 9 emaciated specimens two were tentatively judged to be beyond the possibility of recovery.

O'Connell noted that processing is nearly completed on 200 additional anchovy larvae from the 1977 samples. These, and even more specimens, will be examined during the next few months after which the results will be analyzed and interpreted in respect to questions of survival.

Technique Now Available for Estimating Frequency of Spawning in Anchovy Populations

Dr. Steven Goldberg, visiting scientist at the La Jolla Laboratory from Whittier College who has been working with Fishery Biologist Roger Leong, has found in the laboratory that post-ovulatory follicles of anchovy are identifiable in the ovary for 48 hours after spawning. He has also examined about 60 females captured last March and found that 20% of these had post-ovulatory follicles. This represents a major breakthrough in the spawning frequency project because it provides a technique which will permit estimation of the incidence of spawning in anchovy populations. Determination of the incidence of spawning will make possible the estimation of anchovy spawning biomass directly from egg and larva surveys using a model developed in response to his finding by Statistician Keith Parker. Tentative plans are being made to field test this method of making anchovy spawning biomass assessments during the spring of 1979.

Significant Improvements Made in Methodology of Food Cultures for Larval Fishes

Eric Lynn, Culturist for larval rearing studies at the La Jolla Laboratory, reported this month on the improvements he has made during the past year in the culture of foods for larval fishes.

Lynn's current techniques for culturing rotifers employ the use of Tetraselmis and Chlorella as food, fish emulsion fertilizer (5-1-1) as the medium for the algae in large batch containers, complete harvesting of large batch cultures within 2 days after the cessation of the exponential growth, 8-12, 40-watt fluorescent lamps per culture as sources of radiant energy, steam cleaner sterilizing of containers, and installation of a light controlled room for the culture of Chlorella.

The cumulative effect of these changes has resulted in a more efficient and dependable system for providing rotifers. The system produces 4 to 5 times more rotifers than previously using half the volume of algae and uses about one-third less aquarium floor space, and requires somewhat less labor. In addition, owing to removal of contaminants the

dependability of the entire culture system has been greatly improved. Lynn has now turned his attention to the copepod culture system with encouraging results.

Work Continues on Examination of Earbones for
Age Determination in Anchovy Larvae

R. Methot, graduate student at the Scripps Institution of Oceanography, who has been asked to take over direction of the otolith study at the La Jolla Laboratory since the death of David Kramer in December 1977, reports that daily growth increments in the otoliths of pre-recruit anchovy have been used to determine the age distribution in two samples collected in 1977. Thirteen fish from a sample collected by Smith near Santa Catalina Island on September 12 had birthdates in December 1976 and January 1977, with nine between mid-December and mid-January. The size of the fish, 87 to 97 mm, at ages 8 to 10 months, is in close agreement with the laboratory growth curve compiled by Sakagawa and Kimura (1976). Seventeen small fish (37 to 54 mm) collected in Long Beach harbor on May 23 ranged in age from 3 to 4-1/2 months, about 2 months older than expected from the growth curve. Work has been started on nine samples of pre-recruits collected by the California Department of Fish and Game in July 1976.

Methot further reports that a new embedding technique for otoliths has been developed which allows sectioning of otoliths (measuring 1 to 3 mm) in adult fish in any plane. Anchovy otoliths have been sectioned in the sagittal and frontal planes and skipjack tuna otoliths in the transverse plane. Work is in progress to locate the plane which presents all the increments in skipjack otoliths with maximum clarity and minimum distortion.

* * * * *

This month, Methot with the assistance of Elsie Cubero and Tracey Shafer, have sorted 18 CalCOFI samples obtained during the January 1978 cruise; six contained anchovy larvae. It appears that changing the alcohol at least once after initial preservation has greatly improved the quality of these samples in comparison with those from previous cruises. Otoliths of 108 anchovy larvae from these samples have now been mounted and read.

* * * * *

Written with the late D. Kramer, Methot is completing a manuscript entitled, "In situ growth rate of anchovy larvae in the southern California Bight," which shows close agreement between growth in the field and the temperature-dependent model of growth developed by J. Zweifel, Mathematician at the La Jolla Laboratory. Preliminary analysis of the growth of larvae collected off the coast of Oregon in July 1977 suggests that they also grow as rapidly as well-fed larvae in the laboratory.

SURVEY SYSTEMS DEVELOPMENT AND EVALUATION PROGRAM

CalCOFI-INP Scientists Meet to Review Joint Research Efforts in 1977

As part of the continuing, informal cooperative fisheries research on species of mutual interest between the California Cooperative Oceanic Fisheries Investigations (CalCOFI) (of which the National Marine Fisheries Service is a part) and the Instituto Nacional de Pesca (INP) of Mexico, the CalCOFI-INP Acoustic Subcommittee met in Ensenada, Baja California, on January 24 to review work accomplished in this area during 1977. In attendance for the U.S. were P. Smith who is presently serving as U.S. Coordinator for this research and H. Frey and K. Mais of the CF&G in Long Beach.

Mais reported that the biomass of schooled anchovy within the coastal area surveyed increased from less than 0.5 million metric tons in 1976 to about 1 million metric tons in 1977. Most of the increase was off Baja California.

V. Holliday of Tracor, Inc. which has a NMFS contract to develop resonance frequency applications to biomass estimates, reported on the results of a series of cruises whose purpose was to detect the incoming year class of anchovy and track its growth to recruitment size by means of the resonance frequency phenomenon. Holliday believes these objectives were satisfied for juvenile, pre-recruit and recruit fish and it now appears that they have also succeeded in recording the presence of the late larval stages as well.

As an interesting footnote to this meeting, Smith reported that progress has been made recently in determining the spawning frequency of northern anchovy (see related article on page 9). Following an original observation on follicle formation in rockfish by Dr. G. Moser, Dr. S. Goldberg, visiting scientist from California State, Fullerton, has developed a technique to determine the precise fraction of females which had spawned one day, 2 days or more before capture by examination of the gonads for follicular remnants of the ovulation process. The hope is that the application of this technique will prove to be a major advance in the precision of estimates of spawning biomass from egg and larva surveys.

MULTISPECIES TAXONOMY PROGRAM

Ichthyoplankton

During January, Dr. E. Ahlstrom, Program Leader, reports that identification of CalCOFI samples is almost completed for the 1975 survey

and the staff is now about ready to begin work on identification of samples taken on the 1978 survey cruises.

* * * * *

The manuscript by Moser and Ahlstrom dealing with the rockfish, Sebastes melanostomus, is being revised in accordance with editorial comments from the Fisheries Research Board of Canada. The paper dealing with flatfish developmental series for Pleuronichthys by B. Sumida, Ahlstrom and Moser has been submitted for publication in the Fishery Bulletin, U.S.

* * * * *

In order that the CalCOFI Atlas on rockfish larvae be as complete as possible, rockfish larvae taken on 1972 and 1975 CalCOFI cruises are being standardized and made ready for charting. The other charts for the Atlas have already been prepared.

COMMERCIAL AND RECREATIONAL FISHERIES RESEARCH FOR MANAGEMENT PROGRAM

Proposals for Socio-Economic Research for SW Region Forwarded to Washington

On January 11 at the Center a meeting was held to discuss and decide on proposals for socio-economic research for the Southwest Fisheries Region. This meeting was attended by all the economists in the Southwest Region with the exception of Mike Adams of the Honolulu Laboratory; including Jane McMillan, Dan Huppert and Dennis King of the La Jolla Laboratory, Ed Ueber of the Tiburon Laboratory, and Wes Silverthorne from Terminal Island.

The meeting was prompted by a memo from the NMFS Associate Administrator Winfred Meibohm regarding the availability of funds for contracts on socio-economics and data management and requested the coordination of proposals within the region. Several proposals were suggested by the economists, and consensus was reached on a package of proposals to be forwarded to Washington. Among these proposals were the following: study of the economics of multi-species fisheries: salmon, crab, albacore, groundfish, and shrimp on the Pacific coast; industrial organization study of west coast fishing industry; study of socio-cultural factors involved in fisheries management for California; economic analysis of west coast commercial and recreational swordfish fishery.

A package of proposals from the Honolulu Laboratory included: economic survey and description of market information for the major food fish products in Hawaii; bio-economic analysis of price and catch history

at the Honolulu fish auction; fish consumption in the state of Hawaii; and economic valuation of the recreational fisheries of the Western Pacific Fishery Management Region.

Saury Preliminary Management Plan in Preparation

Fishery Biologist Gary Stauffer at the La Jolla Laboratory, continued his preparation of a saury Preliminary Management Plan. Optimum yield for the first year of a fishery in the U.S. fishery conservation zone will be somewhat below 60,000 MT. At present, there is no indication that a U.S. fishery is likely to develop on saury. The exploratory Japanese fishery of 1969-72 was most successful in late summer and early fall off Oregon, Washington, and Vancouver Island. Because this area overlays the foreign trawl fishery area, and in order to minimize enforcement requirements for the prospective foreign fishery on saury, foreign fishing areas and seasons will be designed to coincide with those of the Washington, Oregon and California trawl fisheries.

Growth of Rockfishes Examined

Rockfishes comprise one of the largest fish families inhabiting marine waters off California and are of major importance to both commercial and sportfisheries. At the La Jolla Laboratory, John MacGregor, Fishery Biologist, has been examining the growth of rockfishes. The von Bertalanffy growth equation, according to MacGregor, describes rockfish growth better than other equations investigated, but it is still not completely satisfactory. The deviations about the curve tend to fall in a distinct pattern; the deviations of observed length from actual length being generally negative for both young and old fish, while the deviations are positive for fish in between. This pattern occurs in published data on rockfish growth.

Rockfish growth is relatively rapid during the first few years. This is followed by a period of fairly constant growth increments, and finally, by a period of more rapidly decreasing growth increments. The von Bertalanffy growth equation does not describe this sort of growth especially well.

* * * * *

Gary Stauffer and Lillian Vlymen prepared a translation of a Soviet paper entitled, "Assessment of potential catch of Pacific Ocean hake based on fisheries data" by Efimov and Lokschina, VNIRO (Yuri Efimov visited the SWFC in January 1976). Based on catch and catch-per-effort data for the Soviet hake fishery off the U.S. West Coast, Efimov estimated

a MSY of approximately 200,000 metric tons. This MSY value is within the range of previous estimates, but the analysis does not include all the Soviet catch from the stock in some years. Copies of the translation were sent to NWAFC and Washington, D.C.

* * * * *

Dr. Huppert continues to develop a computer model approach to the evaluation of various anchovy assessment techniques. The primary considerations are the economic and biological consequences of survey frequency and precision. Actual survey methods will have to be evaluated solely upon their statistical and economic characteristics in this modeling effort. Other considerations will be introduced once some light has been cast upon the general issues of frequency and precision.

Oceanic Fisheries Resources Division

PORPOISE/TUNA INTERACTION PROGRAM

Porpoise Containment System Undergoes Testing at Mississippi Facility

A device which will enable personnel to handle and tag all of the porpoise captured in a purse seine set is undergoing final testing at the National Fisheries Engineering Laboratory (NFEL) facility in Bay St. Louis, Mississippi. James Coe and Jackie Jennings are at NFEL to supervise this work. Field trials are scheduled for February 11; if successful, the device will be shipped by truck to San Diego about March 1.

According to Coe, the device is a series of semi-rigid netting enclosures that will attach to the backdown area of a purse seine. During backdown the animals will enter the device, enabling them to be handled one animal at a time. If desired, the porpoise could then be placed in holding pens until the school can be released as a unit.

A purse seiner is being chartered to conduct sea trials of the device in waters off San Diego in early March. Upon return of the dedicated

vessel, Queen Mary, from its first trip, further local sea trials will be undertaken. Examination of whole porpoise schools and tagging studies are planned for the second trip of the Queen Mary.

Center to Sponsor Age Determination Conference
and Workshop on Toothed Whales

The first announcements are being sent to more than 400 scientists for a 3-day international conference on Age Determination in Odontocetes to be sponsored by the NMFS Southwest Fisheries Center, September 5-7, 1978, at Sumner Hall at Scripps Institution of Oceanography.

Following the conference there will be a workshop from September 8-19, 1978 on the same subject to be held at the Center's La Jolla Laboratory. Additional information may be obtained from the Conference organizers-- W. Perrin and A. Myrick.

Financial support for the conference is being provided by the International Whaling Commission, the Marine Mammal Commission and the National Marine Fisheries Service.

Dedicated Tuna Vessel Departs
on First Cruise

The tuna purse seiner, Queen Mary, left San Diego on January 26 on the first of five planned cruises in 1978. The vessel, together with a crew, is being provided for one year by the U.S. Tuna Foundation for research into the porpoise/tuna interaction.

Chief scientists on this trip is David Holts, Fishery Methods and Equipment Specialist at the La Jolla Laboratory who is in charge of work on modifications of purse seine gear and techniques. Dr. Frank Awbrey, San Diego State University, will direct planned research on acoustics, particularly the response to acoustics by tuna and porpoise.

Others aboard include D. Ljunglad, Naval Oceans Systems Center; P. Patterson, Porpoise Rescue Foundation; and J. DeBeer, Program Manager for the dedicated vessel.

* * * * *

Al Myrick, Wildlife Biologist at the La Jolla Laboratory, has taken delivery on a petrographic photomicroscope which he plans to use to study crystallographic structure in hard parts of porpoise to improve age determination techniques. Preliminary observations made by Myrick indicate that layering in many of the bones of a porpoise skeleton correspond to layering in teeth.

Porpoise Blood Samples Analyzed for Indications of Stress

From October through December 1977, the NMFS chartered the tuna seiner, Margaret L, to conduct studies on porpoise behavior. During this cruise, W. Stuntz, a Marine Mammal Behaviorist, obtained blood samples from live porpoise and from animals killed during routine fishing operations. Blood drawn from 10 live animals is being analyzed using a Serum Multiple Analysis computer, and first indications are that many of the constituents of the blood serum seem related to the duration of chase and the amount of time the animals were confined in the net before release. Further analyses are planned on the serum to sort out the various factors involved.

* * * * *

N. Lo, J. Powers and B. Wahlen have recently completed a draft report, "Incidental porpoise mortality and serious injury in the 1976 eastern tropical Pacific tuna fishery." The report presents the methodologies used for these estimates, comparisons between estimates, and criteria for choosing the best estimate. The draft will be circulated for comments.

Tags for Marking Individual Porpoise Tested at Sea World

Jackie Jennings, Fishery Biologist, reports that a large number of potential tags for marking individual porpoise are currently being tested at Sea World in San Diego on live animals and at the National Fisheries Engineering Laboratory facility under flow tank conditions. Based on results to date, a dorsal disk tag appears to be the best choice. These tags will be tested further in the field under a contract given to the Manta Corporation in Hawaii. The field tests will be conducted using Hawaiian spinner dolphins and are slated to begin on March 1. It is anticipated that some results of this work will be available before April 1 when tagging is to begin on the Queen Mary, the tuna purse seiner dedicated by the tuna industry to research on the porpoise/tuna interaction for one year.

* * * * *

The experimental design for determining school cohesion and fragmentation effects of tagging have been received from V. Gallucci, University of Washington. These designs will be employed in making cruise plans for the second cruise of the dedicated vessel, Queen Mary.

* * * * *

The Data Management group of the Porpoise/Tuna program at the La Jolla Laboratory has completed the manual review of all 1977 set log data received from NMFS observers placed aboard commercial tuna vessels

to monitor porpoise mortality and collect scientific data. With the manual review completed, the operation passes into the machine editing phase using newly documented editing programs. Both the manual review and machine editing are designed to detect errors and inconsistencies in the data so that they may be corrected. These procedures are necessary in implementing the large amounts of data onto data bases.

* * * * *

On January 12, Lts. Terry Jackson and Wayne Perryman, NOAA Corps Officers assigned to the Center, made a flight aboard a U.S. Coast Guard helicopter to develop photographic techniques for the determination of porpoise school size and species identification. This continuing effort is carried out on normal Coast Guard patrol flights with diversions for porpoise photography as time permits. Techniques developed will be used during the aerial survey of porpoise populations planned in 1979.

TUNA RESOURCES PROGRAM

Tuna Vessels Continue Participation in FAX Program

The U.S. tuna fishing fleet left for their traditional fishing grounds in the eastern tropical Pacific on January 1, 1978 with the exception of a few boats that remained in port to complete necessary repairs and maintenance.

Since radio crystals required for operating on the new frequencies which have been assigned to Commerce-licensed radio station WWD were not available before the effective date of change on January 1, the government granted permission for the vessels to transmit on the old frequencies until such time as the new crystals could be obtained. A delay of about 2 months is anticipated and in the interim vessel navigators have been instructed to make their transmissions on a non-interference basis.

During January 1978, 20 U.S. seiners participated in the FAX program of the La Jolla Laboratory. Weather observations reporting rates for the month were down from January 1977 by 11.9%, while XBT reporting rates were up by 100%.

January Reporting Rates

	<u>Weather Observations</u>	<u>XBT Observations</u>	<u>Total Observations</u>
1977	185	5	190
1978	163	10	173
Percent change	-11.9%	+100%	- 8.9%

The fishing vessel, Marco Polo, led all cooperating vessels with 21 marine weather observations radioed in January.

Biological Data Collected on
Atlantic-Caught Tunas

Atlantic-caught tunas transshipped to American processors through Puerto Rico have been routinely sampled for biological information by Eugene Holzapfel, Biological Technician at the La Jolla Laboratory, since March 1975. Data on fork length, weight, and species composition are collected. Results of sampling during the period January 1977 to January 1978 are as follows:

Species	Gear	Number of samples	Number of fish sampled	Tonnage sampled (metric tons)
Yellowfin	Baitboat	47	2,065	520
	Purse Seine	2	81	27
	Unknown	2	86	6
Skipjack	Baitboat	33	1,665	4,343
	Purse Seine	9	454	2,434
	Unknown	1	50	98
Bigeye	Baitboat	18	833	205
	Purse Seine	2	88	21
	Unknown	1	44	4
Albacore	Longline	4	200	655
TOTAL		119	5,566	8,313

Computer Program, 'Swordfish' Written to
Summarize Data from California
Harpoon Fishery

Members of the Tuna Resources staff at the La Jolla Laboratory in cooperation with California Department of Fish and Game personnel have written a computer program entitled, 'Swordfish', which summarizes fishing data from the California harpoon fishery. The swordfish fishermen report to CF&G via a logbook format. Logbook data from 1974 through 1977 has now been edited and processed using the 'Swordfish' computer program.

U.S. Tuna Purse Seiner Catches
Sampled for Size Composition

The Inter-American Tropical Tuna Commission (IATTC) annually samples the U.S. tuna purse seine fleet fishing in the Atlantic Ocean. Under a contract with the National Marine Fisheries Service these vessels are sampled for the length composition of their catches.

An estimated 11 U.S. purse seiners participated in the eastern Atlantic tuna fishery off Africa in 1977. As of January 31, 1978 the following samples have been received:

Species	Number fish sampled	Tonnage sampled (metric tons)	No. of samples	Total ^{1/} catch (metric tons)
Yellowfin	800	519	16	7,138
Skipjack	750	515	15	6,061
Bigeye	50	20	1	331
Other	250	36	5	124
TOTAL	1,850	1,090	37	13,654

A preliminary analysis of these samples shows that U.S. vessels are catching larger yellowfin tuna this year than in the past due to increased catches further offshore. The average length of yellowfin tuna caught off Africa in 1977 was 94 centimeters, compared to 82 centimeters in 1976.

Analysis of Data on Atlantic Yellowfin
and Albacore Underway--Results to be
Presented at 1978 ICCAT Meeting

Preparation of information which will be presented at the 1978 meeting of the International Commission for the Conservation of Atlantic Tunas (ICCAT) meeting in Madrid in November has been started by the staff of the Tuna Resources group at the La Jolla Laboratory. Compilation and analysis of information will focus on Atlantic yellowfin and albacore, two species which have been identified by ICCAT as in need of special attention. The work on yellowfin tuna will concentrate on 1) the differences

between inshore and offshore populations; 2) the effects of recruitment trends and current size regulation on stock conservation; and 3) the effects of changes in definition of unit stock on stock evaluation.

The work on albacore will address such basic questions as the spawner-recruit relationships, yield-per-recruit analysis, and the effects of changes in definition of unit stocks on assessment.

In addition to these specific items the staff will update their ongoing research on various other tuna species.

TIBURON LABORATORY

FISH COMMUNITIES INVESTIGATION

Method Developed for Photographing Otoliths

Fishery Biologists Tony Chess, of the Recreational Fish Communities Task, and Tina Echeverria, of the Rockfish Analysis Task at the Tiburon Laboratory, report they have developed a method of photographing otoliths that clearly outlines the rings of at least the younger fish. This technique should prove useful in characterizing species by the size and structure of their otoliths, as well as in studying seasonality of ring formation in the younger fish.

Record-Sized Squarespot Rockfish Collected

During a recent trip made by Ms. Echeverria to tag rockfishes, a record-sized squarespot, Sebastes hopkinsi, was taken. This 294 mm specimen exceeded the previous record by over 10 mm. Its significance lies in the importance of large individuals when collecting data to establish growth curves.

Report on Flatfish Fishery Prepared

Dr. William Lenarz, Leader of the Rockfish Analysis Task, and Fishery Biologist Peter Adams at the Tiburon Laboratory, completed the draft of a report on the Oregon flatfish fishery that will be included in the Groundfish Management Plan.

Investigation Leader Joins State Committee

Dr. Edmund Hobson, Investigation Leader, has accepted a position on the State of California Scientific Advisory Committee on Sea Otters, which is to make recommendations concerning research being conducted on these animals along the California coast.

FISHERIES DEVELOPMENT INVESTIGATION

Rough Seas Halt Test of New Rockfish Trawl Gear

Rough seas throughout most of the month prevented testing of the laboratory's new rockfish midwater trawl gear. The gear is aboard the fishing vessel Cape Wendy in Bodega Bay.

Final preparations are being made to harvest euphausiids by the captain of the vessel Lady Olga. The first attempt with the new midwater trawl should be made in early February in Monterey Bay. A small market is presently available, and development of a larger one is likely.

Because of considerable interest shown by fishermen and buyers, the staff is manufacturing experimental traps to catch octopus and whelk (Kelletia kelletii). Initial fishing attempts should take place in March or April.

Preparations Made for Salmon Imprinting Studies

Preparations were made for imprinting studies on king and coho salmon to be conducted this year. Plans are to imprint and release 100,000 king salmon this spring and 50,000 coho salmon this summer.

When the returning fish are expected, starting the year after release, the imprinting chemical will be released at a different site in the Bay to determine if the fish can thus be "led" to popular fishing areas. The California Department of Fish and Game will supply the kings, if available. The coho salmon are being purchased at Rochester, Washington.

Angling Methods in California

During the month, Ms. Susan Smith resumed work on the chronology of angling method changes in California, with emphasis on northern California recreational fisheries. The section on general developments in fishing equipment was completed and submitted for draft typing.

PHYSIOLOGY INVESTIGATIONS

Paper Describes Bioenergetics of Prefeeding Striped Bass

A first draft was completed on a paper describing the bioenergetics of prefeeding striped bass (Morone saxatilis) embryos and larvae. Endogenous energy sources were quantified and biochemically described. Rates and sequences of utilizations of the yolk and oil globule were discussed along with their relation to growth.

Examination of ossification in striped bass larvae fed different food rations was begun in January. Specimens were differentially stained with Alcian blue and alizarin, which outlines cartilage and bone. With this method it is possible to monitor differences in the rates and sequences of development in endochondral bone.

Chemical Analysis of Tissue Samples for
Low-Boiling Petroleum Hydrocarbons Continues

Task members at the Tiburon Laboratory continued chemical analyses of tissue samples for low-boiling petroleum hydrocarbons. These analyses are being incorporated into manuscripts for presentation at an oil pollution meeting in June. In addition, work continued on a manuscript dealing with new techniques for detecting petroleum hydrocarbons in water and tissues.

* * * * *

A proposal for additional OCSEAP funds to complete ongoing research and manuscripts was prepared by task personnel this month and was submitted to the OCS Project Office, Juneau. This funding would provide technicians needed to process remaining tissue samples and would support existing staff to complete data analyses and manuscripts.

PUBLIC AFFAIRS

- January 10 - As part of Center participation in the San Diego County Department of Education "Meet the Scientist Program," Dr. P. Smith spoke at Hale Junior High on the subject of "Fisheries and fishery research in the California Current."
- 17 - A class of 13 exceptional students from the Rancho del Mar school in Encinitas, California visited the SWFC for a lecture and tour. L. Vlymen hosted the group.
- 18-19 - J. Coe, Fishery Biologist in the Porpoise/Tuna program, presented a talk to a California Department of Fish and Game Managers' meeting in Sacramento on the porpoise mortality problem in terms of regulation and research.

SEMINARS

- January 30 - Dr. Reuben Lasker, Leader of the Coastal Fisheries Resources Division at the La Jolla Laboratory, presented a talk on the on-going research of his group.

TRAINING

January 16 -
May 26

- Susan E. Smith, Tiburon Laboratory, Fishery Biology, College of Marin, Kentfield, California.

January 17
May 23

- Susan E. Smith, Tiburon Laboratory, Ornithology, College of Marin, Kentfield, California.

VISITORS

Honolulu Laboratory

January 1

- Patricia and Brian Johnson visited Honolulu Laboratory and met with Mr. Shomura, Dr. Skillman, and Mr. Hida to discuss logistics in establishing a temporary base on Laysan Island for the Johnson's monk seal research. The Johnson's are under contract to the Marine Mammal Division of the Northwest and Alaska Fisheries Center to do this research.

6

- Dr. John Craven, Dean of Marine Programs and Drs. Richard Grigg and Jed Hirota, Hawaii Institute of Marine Biology, met with Director Shomura to discuss University of Hawaii input into the NWHI Cooperative Study.

12

- Stephen H. Smith, Pacific Outer Continental Shelf Office, Los Angeles, California, visited several staff members to discuss the precious coral Fishery Management Plan.

16-20

- Nelson Ross, NOAA Liaison Officer, Environmental Data Service, who is located at the La Jolla Laboratory, visited Hazel Nishimura, Librarian. Ross offered his services for computer search requests on the various data bases available to NOAA agencies.

18

- Dr. Jean Cramer, University of Hawaii, discussed publication of a paper describing the burnt tuna problem with Shomura and Yuen.

19

- Dr. William P. Muellenhoff, Manned Undersea Science and Technology Office, Rockville, Maryland, and Dr. D. Allan Waterfield, University of New Hampshire, Durham, New Hampshire, visited Acting Director Otsu to discuss the possible use of General Dynamics submersible STAR II, in connection with the NWHI study.

- January 23 - Drs. Jack Davidson, Phil Helfrich, and Hiroshi Yamauchi, University of Hawaii, who are members of the Long-Range Planning Team of the Scientific and Statistical committee, WPRFMC, met with Mr. Shomura.
- Mr. and Mrs. Jim McGee, Deep Ocean Resources, Kihei, Maui, visited Shomura to discuss shark and swordfish fishing in Hawaiian waters.
- 30-31 - Center Management Meeting participants arrived in Honolulu for meetings to be held at Honolulu Laboratory on February 1 and 2.

La Jolla Laboratory

- January 3 - Dr. Howard M. Feder, Institute of Marine Science, University of Alaska, Fairbanks, Alaska.
- 10 - F. Canlis and J. D'Elis, SW Region, Terminal Island.
- W. Giguere, Tiburon Laboratory.
- M. Godfrey, R. Skillman, J. Arakawa, Honolulu Laboratory.
- 16 - Richard Haight, NMFS Auke Bay Laboratory, Auke Bay, Alaska.
- 17 - Theodore P. Gleiter, Assistant Administrator for Administration, NOAA, Washington, D.C.
- 18-19 - Fred Brooks, NMFS, Washington, D.C. who is working on the NMFS Fishing Information System at La Jolla for discussions with Mackett and F. Kellenberger.
- 25-26 - William Beasley, Office of the Secretary of Commerce, Washington, D.C. here to conduct a Commerce Field Structure Study. The objective of the study is to determine whether, in view of the Department's responsibilities and programs, any restructuring of field operations should be undertaken.
- 23 - Frank Christhlf, Office of Personnel, NOAA, Washington, D.C.
- 27 - Herb Frey, and B. Bell, CF&G, at the Center to discuss a joint State-Federal program on swordfish.
- K. Claude Lee, University of Washington.

- January 27 - Dr.J. S. Beckett, Fisheries Canada, Ottawa.
- E. Salerno, Ministry of Commerce and Industry,
 Republic of Panama.
- L. Rodriguez M. and O. Orostegui F., INFONAC, Managua,
 Nicaragua.
- 30-31 - Mr. Dale Sortland, NMFS Fishing Information System,
 Washington, D.C.

Pacific Environmental Group

- January 16 - Mr. Dave Thomas, California Department of Fish and
 Game, Menlo Park, California.

Tiburon Laboratory

- January 6 - Louis P. Torre, USCG, Washington, D.C.
- 9 - Virgil Norton, University of Rhode Island, Kingston,
 Rhode Island.
- Warren Johnston, University of California at Davis,
 Davis, California.
- 10 - Warren Nayprin, Cook, R/V Cromwell
- W. T. Davoren, U.S. Fish and Wildlife Service, San
 Francisco, California.
- 13 - Abby H. Gorham, University of Alaska Sea Grant Program,
 Fairbanks, Alaska.
- 18 - Richard Haight, NMFS, Auke Bay Laboratory, Auke Bay,
 Alaska.
- 19 - R. F. Westley, Washington Department of Fisheries.
- Darrell Demory, Oregon Department of Fish and Wildlife,
 Newport, Oregon.
- Mel Odemar, California Department of Fish and Game,
 Sacramento, California.
- 20 - Dr. Dwight W. Taylor, San Francisco State University,
 Tiburon, California.
- 24 - William Beasley, U.S. Department of Commerce, Washington, D.C.

- January 25 - Richard L. Bailey, EIP Corp., San Francisco, California.
- 27 - Don Burns, California Fish and Game, Menlo Park, California.
- 29 - Bruce Wyatt, U.C. Sea Grant, Santa Rosa, California.
- 30 - William G. Court, East-West Center, University of Hawaii, Honolulu, Hawaii.
- 31 - W. Klussman, Texas A&M, College Station, Texas.

MEETINGS AND TRAVEL

- January 9 - Dr. Virgil Norton, University of Rhode Island, and Dr. Warren Johnston, University of California at Davis, met with Dr. Edmund Hobson, Dr. William Lenarz, Susumu Kato, Edward Ueber and Norman Abramson at the Tiburon Laboratory to discuss marine fisheries research needs. Dr. Norton was compiling information for presentation to the National Academy of Science's Ocean Policy Committee.
- 8-12 - Director Shomura, Honolulu Laboratory, attended the ninth meeting of the Western Pacific Regional Fishery Management Council (WPRFMC) in Saipan on January 10-11.
- 9-11 - Dr. G. Moser, La Jolla Laboratory, was in Washington, D.C. to attend a Deep Ocean Mining Environmental Study, Phase II, Workshop.
- 9-12 - Drs. N. Lo and W. Perrin, La Jolla Laboratory, traveled to Seattle to attend a workshop on marine mammals. The group was particularly concerned with the population of Dall's porpoise in the Bering Sea and Alaska, recommending a specific research program on this species.
- 9-11 - R. Lasker attended the Ocean Policy Committee meeting held at Scripps Institution of Oceanography.
- 9-13 - Administrative Officer B. Remington initiated a meeting at the Center with other SWFC staff members, representing all four laboratories, who will be responsible for originating data for input to the Center's Financial Reporting System.

- January 10 - Director N. Abramson met with William Davoren, U.S. Fish and Wildlife Service, and William Leet, Southwest Region, to discuss Davoren's ideas on the development of a California Estuarine Study Center. This meeting was held at the Tiburon Laboratory.
- 11 - Members of the Pacific Regional Fishery Management Council and their guests were welcomed to the Center by Director Barrett who presented a talk, illustrated with slides, on the research of the Center's four laboratories. Also on the agenda were Regional Director Gerald V. Howard and Dr. James Sullivan, Director of Sea Grant, University of California, San Diego. Following the presentations, Dr. R. Lasker led the group on a tour of the Center's research facilities.
- 12 - J. Squire, La Jolla Laboratory, in Long Beach to meet with CF&G staff to develop a proposal for swordfish catch sampling.
- 12-13 - Director Barrett attended the Pacific Fishery Management Council meeting, held at the Bahia Hotel, San Diego.
- 16-20 - Director Barrett in Washington, D.C. to attend the Regional Directors-Center Directors meeting.
- 17-26 - Richard Uchida, Honolulu Laboratory, traveled to Guam and Saipan, Mariana Islands, to meet with government fishery officials of these islands to discuss plans for a forthcoming research cruise to the area around the Northern Mariana Islands.
- 19-20 - The Dungeness Crab Management Development Team, of which Ed Ueber, Economist at the Tiburon Laboratory, is a member, held a meeting at the Laboratory.
- 20 - Shomura attended a meeting called by the Marine Affairs Coordinator's office to discuss Hawaii fisheries problems with members of the fishing industry.
- 23 - Tina Echeverria and Kathy Fourre of the Tiburon Laboratory traveled to California Fish and Game, Menlo Park to discuss rockfish aging.
- 23-24 - Barrett and Fox, La Jolla Laboratory, attended the pre-IATTC meeting of the U.S. delegation held at the Center. Subsequently, Dr. Fox attended the IATTC meeting at the Shelter Island Inn in San Diego.

- January 24-25 - Task definitions were reviewed and responsibilities assigned during planning sessions for the upgrade and refurbishment of scientific and ship's systems of the R/V David Starr Jordan. The meetings, held at Pacific Marine Center (PMC), Seattle, were attended by personnel from NOAA and the marine architects, M. Rosenblatt and Sons. Dr. R.M. Laurs represented the SWFC. Specific assignments that fell to the Center are to provide PMC with equipment and arrangement requirements for the Scientific Information Center room and the wet laboratory.
- 24-26 - D. Mackett traveled to Washington, D.C. to attend an Economics Planning Session.
- 25 - Tina Echeverria, Tiburon Laboratory, participated in a partyboat cruise of San Francisco Bay for the purpose of rockfish tagging.
- 24-25 - Shomura, Honolulu Laboratory, chaired a 2-day meeting of the Scientific and Statistical Committee of the Western Pacific Regional Fishery Management Council.
- 26 - Dr. Laurs, accompanied by Lt. D. McConaghy, visited the National Environmental Satellite Service field service station in Redwood City, California. They observed the VHRR data collection process and talked with various staff members concerning desirable satellite products relevant to fisheries research.
- 27-28 - Shomura, Honolulu Laboratory, attended a meeting organized by Dr. John P. Craven, State Marine Affairs Coordinator, to discuss with political leaders of Hawaii, American Samoa, Guam and the Northern Marianas a proposed South Pacific regional fisheries agency. The purpose of the meeting was to provide the island leaders an opportunity to present Patsy Mink, Assistant Secretary of State for Oceans and International, Environmental, and Scientific Affairs, with their views on the subject.
- 30 - N. Abramson, Tiburon Laboratory, traveled to Honolulu to attend the Center's Quarterly Management meeting held in Honolulu January 31 to February 2.

- January 31 - Bruce Wyatt and Richard Teague of UC, Davis extension and Wallace Klussman of Texas A&M met with Sus Kato at the Tiburon Laboratory in connection with Sea Grant projects.

PERSONNEL

- January 1 - Andrew E. Dizon, Fishery Biologist (Research), Promotion - Honolulu Laboratory.
- Edmund S. Hobson, Fishery Biologist, Promotion - Tiburon Laboratory.
- 4 - Diane E. Mercer, Appointment--30 days - Tiburon Laboratory.
- 11 - R. Nicholl, Biological Aid, EOD - La Jolla Laboratory.
- 15 - Warren Stuntz, Fishery Biologist, EOD - La Jolla Laboratory.
- C. Thompson, Economist, EOD, Student-Part-Time appointment - La Jolla Laboratory.
- Robert L. Humphreys, Jr., Biological Aid (Fisheries), CC/WAE Appointment - Honolulu Laboratory.
- 23 - B. Macewicz, Biological Technician, Temporary Appointment - La Jolla Laboratory.
- 24 - Richard A. Barkley, Supervisory Oceanographer, Retirement - Honolulu Laboratory.
- 29 - Glenn R. Higashi, Biological Aid (Fisheries), Conversion to CC/WAE - Honolulu Laboratory.
- Darryl Tagami, Biological Aid (Fisheries), Conversion to CC/WAE - Honolulu Laboratory.
- L. Dick, Biological Aid, Temporary Appointment - La Jolla Laboratory.
- M. Pierce, Clerk-Typist, EOD - La Jolla Laboratory.
- 31 - E. Marbibbi, Computer Programmer, EOD - La Jolla Laboratory.

HONORS AND AWARDS

- Jnaury 14 - Ray Sumida, Honolulu Laboratory, earned a 15-year service pin.

UNITED STATES
DEPARTMENT OF COMMERCE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST FISHERIES CENTER
8604 LA JOLLA SHORES DRIVE
P.O. BOX 271
LA JOLLA, CALIFORNIA 92038

OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE, \$300

AN EQUAL OPPORTUNITY EMPLOYER

POSTAGE AND FEES PAID
DEPARTMENT OF COMMERCE
210



THIRD CLASS